

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-202-2
Relating to Exemptions Under Section 27156
of the Vehicle Code

DETROIT DIESEL CORPORATION
DDEC ENGINE UPGRADE KIT

Pursuant to the authority vested in the Air Resources Board (ARB) by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That installation of the DDEC Engine Upgrade Kit, manufactured by Detroit Diesel Corporation of 13400 Outer Drive, West, Detroit, Michigan 48239-4001, has been found not to reduce the effectiveness of the applicable vehicle pollution control system, and therefore, the DDEC Engine Upgrade Kit is exempt from the prohibitions of Section 27156 of the Vehicle Code for installation on Detroit Diesel Corporation's (DDC's) 1985-1987 DDEC I, 1988-1990 DDEC II, and 1993 DDEC II 6V92TA two-stroke urban bus diesel engines with power ratings of 253 and 277 horsepower.

The DDEC Engine Upgrade Kit rebuilds all applicable engines to meet California's 1991 model-year heavy-duty diesel urban bus engine emission standards of 0.10 grams per brake-horsepower-hour (g/bhp-hr) particulate matter (PM) and 5.0 g/bhp-hr oxides of nitrogen (NOx).

The required DDEC Engine Upgrade Kit parts are listed in the parts lists which are attached hereto and incorporated herein.

The DDEC Engine Upgrade Kit consists of three kits: 1) engine rebuild kit - newly manufactured parts, 2) engine rebuild kit - rebuilt parts, and 3) converter/muffler kit. The newly manufactured parts kit consists of a gasket kit, air inlet hose, blower drive gear (2.05 to 1), blower by-pass valve assembly, cylinder kits (piston assemblies and cylinder liners), new electronic-unit fuel injectors, and DDEC IV conversion kits. The rebuilt parts kit consists of remanufactured camshafts, blower assembly, turbocharger, and head assemblies. The converter/muffler kit consists of an Engine Control Systems direct-replacement oxidation catalyst and an exhaust temperature sensor. One of each type kit is required for the rebuild of an engine.

For all of the applicable engines, DDC's revised certification word codes listed in Attachment A must be used.

This exemption is based on emission tests conducted by DDC on a 6V92TA DDEC engine. DDC conducted a series of hot-cycle emission tests using various horsepower, torque, test fuel, and engine rotation combinations. The following are the highest hot-cycle federal transient heavy-duty diesel engine test results for a 6V92TA DDEC engine with a 277 horsepower rating:

	HC	CO	NO	PM
	<u>(grams per brake horsepower-hour)</u>			
Hot-Cycle Emissions	0.10	0.23	4.59	0.09
<i>Emission Standard</i>	<i>1.3</i>	<i>15.5</i>	<i>5.0</i>	<i>0.10</i>

The test data show that the 6V92TA engine with the DDEC Engine Upgrade Kit meets the applicable emission standards. The same emissions impact is expected when the DDEC Engine Upgrade Kit is installed on all the engines for which the exemption is requested.

This Executive Order is valid provided that installation instructions for the DDEC Engine Upgrade Kit not recommend tuning the vehicle to specifications different from those submitted by the vehicle manufacturer.

Changes made to the design or operating conditions of the DDEC Engine Upgrade Kit, as exempt by the ARB, which adversely affect the performance of a vehicle's pollution control system shall invalidate this Executive Order.

Marketing of the DDEC Engine Upgrade Kit using an identification other than that shown in this Executive Order or for an application other than those listed in the attachments shall be prohibited unless prior approval is obtained from the ARB.

In addition to the foregoing, the ARB reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted DDEC Engine Upgrade Kit continues to meet the standards and procedures of Title 13, California Code of Regulations, Section 2222 et seq.

This Executive Order does not constitute any opinion as to the effect the use of the DDEC Engine Upgrade Kit may have on any warranty either expressed or implied by the vehicle manufacturer.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF DETROIT DIESEL CORPORATION'S DDEC ENGINE UPGRADE KIT.

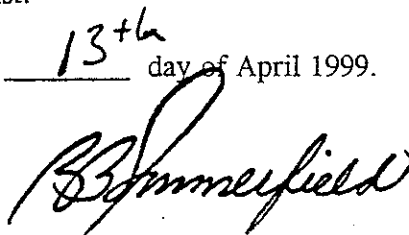
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No claim of any kind, such as "Approved by the Air Resources Board," may be made with respect to the action taken herein in any advertising or other oral or written communication.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order. The Executive Order may be revoked only after a ten-day written notice of intention to revoke the Executive Order, in which period the holder of the Executive Order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request and the Executive Order may not be revoked until a determination after the hearing that grounds for revocation exist.

Executed at El Monte, California, this 13th day of April 1999.

A handwritten signature in black ink, appearing to read "R. B. Summerfield", is written over the printed name below.

R. B. Summerfield, Chief
Mobile Source Operations Division

DETROIT DIESEL CORPORATION

PARTS LISTS FOR BASE ENGINE COMPONENTS

USED FOR REBUILDING OF 6V-92TA DDEC COACH ENGINES

TO ACHIEVE 0.10 G/HP-HR PARTICULATE EMISSIONS

ENGINE ORIENTATION: UPRIGHT

ENGINE MODELS: 8067 7B27, 8067 7B28

ROTATION: RH

NEW PART KIT: R23524202

GASKET OVERHAUL KIT: 23512684

CYLINDER KITS (6): 23524343

AIR INLET HOSE: 23505560

BY-PASS VALVE: 8927187

ELECTRONIC FUEL INJECTOR (6): R5236962

BLOWER DRIVE GEAR: 8928595

DDEC II TO DDEC IV KIT: R23524200 (T-DRIVE)

RELIABILITY KIT: R23519194

RB CAM & PLUG ASM: R23507995

LB CAM & PLUG ASM: R23507995

BLOWER ASM: R8927039

TURBOCHARGER: R23508799

CYLINDER HEAD ASM (2): R23504270

DETROIT DIESEL CORPORATION

PARTS LISTS FOR BASE ENGINE COMPONENTS
USED FOR REBUILDING OF 6V-92TA DDEC COACH ENGINES
TO ACHIEVE 0.10 G/HP-HR PARTICULATE EMISSIONS

ENGINE ORIENTATION: 15 DEG. TILT

NEW PART KIT: R23524202

GASKET OVERHAUL KIT: 23512684

CYLINDER KITS (6): 23524343

AIR INLET HOSE: 23505560

BY-PASS VALVE ASM: 8927187

ELECTRONIC FUEL INJECTOR (6): R5236962

BLOWER DRIVE GEAR: 8928595

DDEC II TO DDEC IV KIT: R23524199 (V-DRIVE)
R23524200 (T-DRIVE)

ROTATION: RH

ENGINE MODELS: 8067 7B21, 8067 7B22

RELIABILT® KIT: R23519194

RB CAM & PLUG ASM: R23507995

LB CAM & PLUG ASM: R23507993

BLOWER ASM: R8927039

TURBOCHARGER: R23508799

CYLINDER HEAD ASM (2): R23504270

ROTATION: LH

ENGINE MODELS: 8067 3B21, 8067 3B22

RELIABILT® KIT: R23519193

RB CAM & PLUG ASM: R23507992

LB CAM & PLUG ASM: R23507991

BLOWER ASM: R8927039

TURBOCHARGER: R23508799

CYLINDER HEAD ASM (2): R23504270

DETROIT DIESEL CORPORATION

PARTS LISTS FOR BASE ENGINE COMPONENTS

USED FOR REBUILDING OF 6V-92TA DDEC COACH ENGINES

TO ACHIEVE 0.10 G/HP-HR PARTICULATE EMISSIONS

ENGINE ORIENTATION: 43 DEG. TILT

NEW PART KIT: R23524201

GASKET OVERHAUL KIT: 23512683

CYLINDER KITS (6): 23524343

AIR INLET HOSE: 23505560

BY-PASS VALVE ASM: 8927187

ELECTRONIC FUEL INJECTOR (6): R5236962

BLOWER DRIVE GEAR: 8928595

DDEC II TO DDEC IV KIT: R23524199 (V-DRIVE)

R23524200 (T-DRIVE)

ROTATION: RH

ENGINE MODELS: 8067 7B23, 8067 7B24

RELIABILT@ KIT: R23519194

RB CAM & PLUG ASM: R23507995

LB CAM & PLUG ASM: R23507993

BLOWER ASM: R8927039

TURBOCHARGER: R23508799

CYLINDER HEAD ASM (2): R23504270

ROTATION: LH

ENGINE MODELS: 8067 4B23, 8067 4B25

RELIABILT@ KIT: R23519193

RB CAM & PLUG ASM: R23507992

LB CAM & PLUG ASM: R23507991

BLOWER ASM: R8927039

TURBOCHARGER: R23508799

CYLINDER HEAD ASM (2): R23504270

Parts List No. 5

CONVERTER/MUFFLER PART NUMBERS FOR DIFFERENT BUS OEMs

MANUFACTURER: ENGINE CONTROL SYSTEMS

ECS PART NUMBER	BUS OEM	CONFIGURATION
5700-003D	FLXIBLE	COWL - VERTICAL
5700-004D	FLXIBLE	COWL - STREET
5700-006D	FLXIBLE	COWL - STREET
5700-014D	FLXIBLE	COWL - STREET
5700-015D	FLXIBLE	COWL - VERTICAL
5700-016D	FLXIBLE	COWL - VERTICAL
5700-019D	FLXIBLE	COWL
5700-020D	FLXIBLE	COWL - ROOF
5700-021D	FLXIBLE	COWL
5700-022D	FLXIBLE	COWL
5700-023D	FLXIBLE	COWL - ROOF
5700-024D	FLXIBLE	COWL
5700-025D	FLXIBLE	COWL
5800-001D	GMC	ROUND
5800-002D	MCI CLASSIC	ROUND
5900-003D	IKARUS	OVAL
6000-001D	RTS	OVAL
6000-002D	TMC	OVAL
6000-005D	TMC	OVAL
6000-006D	RTS	OVAL
6400-004D	ORION	OVAL
6400-005D	ORION	OVAL
6500-001D	GILLIG	OVAL
6500-002D	GILLIG	OVAL
6500-003D	GILLIG	OVAL
6700-001D	EAGLE	OVAL
6800-001D	NEOPLAN	OVAL
6800-002D	NEOPLAN	OVAL

Attachment A

Revised Certification Word Codes (CWC's) for Detroit Diesel Corporation's DDEC Engine Upgrade Kit

Revised
CWC*

1096

1097

1098

1099

1100

1101

1102

1103

1104

1105

1106

1107

* Specified in Detroit Diesel Corporation's revised notification of intent to certify and other documents.